

REMARKS/ARGUMENTS

Status of Claims

Claims 10, 14-19 and 23-30 are pending in the application, with claims 10, 19 and 28 being the only independent claims. Claims 1-9 have been previously cancelled without prejudice or disclaimer. Independent claims 10, 19, and 28 have been amended to emphasize the subject matter being claimed. More specifically, the amendments to the independent claims emphasize that the permanent magnets and the coils form the holder that at least partially suspends the door, which is already recited in the claim, and recite that at least a portion of the permanent magnets is arranged horizontally coplanar with the coils. Support for the latter limitation is found in Figs. 1 and 23 and, for example, in paragraph [0059] of the published version of the present application (US 2005/0235567), which discloses that the magnets 13 are arranged between rails 6 and that the coils 7 are arranged on the outer sides of the guide rails 6.

No new matter has been added.

Telephonic Interview

A telephonic interview was conducted on April 5, 2010 between Examiner Strimbu and Applicant's undersigned representative. Applicant would like to express that the Examiner's time and consideration are greatly appreciated. During the telephonic interview, the recitation that the magnets and coils form a magnetic force that suspends the fixed door leaf and drives the door was discussed. Further, the structural arrangement of the magnets being horizontally co-planar with the coils was also discussed.

Summary of the Office Action

Claims 10, 14-19 and 23-27 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Kabout (US 5,712,516) in view of Karita (US 4,876,765) and Tucker (US 3,105,272).

Claim 28 has been rejected under 35 U.S.C. § 103(a) as unpatentable over Kabout in view of Karita.

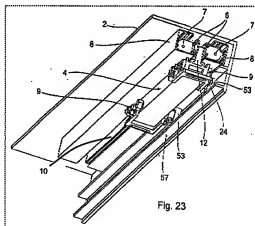
Claims 29 and 30 have been indicated as containing allowable subject matter.

Subject Matter Described in the Specification

The following descriptive details are based on the specification. They are provided only for the convenience of the Examiner as part of the discussion presented herein, and are not intended to argue limitations which are unclaimed.

The present application discloses a linear drive arrangement for a sliding door in which a drive carriage of a sliding door 5 is movable by a linear drive 1 and the sliding door 5 is suspended by a magnetic force of the linear drive 1. The linear drive 1 includes a stationary guide rail 3 mounted in a holder 2 (see Fig. 1 and para. [0017] of the original specification). The guide rail 3 includes C-shaped slide rails 6 which are spaced apart with their open sides facing away from one another (see para. [0018] and Fig. 1). Coils 7 are arranged on oppositely facing open sides of the C-shaped slide rails 6 (see para. [0018] and Fig. 1).

The linear drive 1 also includes a guide carriage 4, which is displaceable in the guide rail 3 (see para. [0017] and Fig. 1) and carries the sliding door 5 to be movable in the direction of the guide rail 3. A portion of the guide carriage 4 is located between the slide rails 6. The guide carriage 4 includes a supporting rail 10 connected to a holding member 12 (see para. [0019] and Fig. 2). Magnets 13 are received in the holding member 12 and cooperate with the coils 7 to



form a holder and a drive for the sliding door 5 (see para. [0019]). As described above, the magnets 13 are arranged between the rails 6 on which the coils 7 are mounted and the magnets 13 and coils 7 are thus horizontally co-planar (see para. [0059] and Figs. 1 and 23).

At least one supporting roller 53 is provided to support the guide carriage 4 on a guide track 57 when the guide carriage 4 is not fully suspended by the magnetic force, i.e., at the beginning and end of movement of the guide carriage 4 (see Fig. 23).

Patentability of the Invention

A. Independent Claim 10 is Allowable

Independent claim 10 recites “a plurality of permanent magnets fixed to said guide carriage, wherein at least a portion of each of the permanent magnets is horizontally co-planar with said coils” and “said permanent magnets and said coils form a holder so that the guide carriage, with the fixed door leaf, is suspended at least partially by a magnetic force between said permanent magnets and said coils of said stator arrangement” and “wherein the same permanent magnets and coils form a linear drive for the door leaf so that the guide carriage can be driven along said guide track by said magnetic force.”

The combination of Kabout, Karita, and Tucker fails to disclose magnets and coils that are horizontally co-planar, that generate a magnetic force that at least partially suspends the door, and that form a linear drive that drives the guide carriage along the guide track.

The Office Action alleges that Kabout’s magnets 10 and coils 18 form a holder, as recited in independent claim 1 (see page 3, lines 1 and 2 of the Office Action). The above interpretation of Kabout is incorrect because, as explained in more detail below, the door panel 1 in Kabout is suspended by a magnetic force acting between the magnets 10 and the guide plate or strip 11, and not between the magnets 10 and the windings 18 that form the linear drive.

Kabout discloses a door panel 1 that is suspended from a lintel 2 (see col. 2, lines 9-12; and Fig. 1 of Kabout). A number, or series, of magnets or magnet-groups 10 arranged at a top of the door have a magnetic field strength that creates an attractive force to the guide plate 11 arranged on the underside of lintel 2 that is sufficient to lift the weight of the door panel 1 (see col. 2, lines 16-20; and Fig. 2 of Kabout). Arranged at the ends of the magnet groups is a guide wheel 12 which runs in a guide 14 on the underside of strip 11 (see col. 2, lines 20-23 of Kabout). In other words, the suspension of Kabout's door panel is realized by a magnetic force that is generated by the permanent magnets 10 and the guide plate or strip 11 in Kabout.

A stator element 15 is arranged above the guide strip 11 to enable reciprocal movement of the door panel 1 (see col. 2, lines 22-24 of Kabout). The stator includes an elongate holder 16 and plural carriers 17, each carrier 17 having a winding 18 (see col. 2, lines 24-32). Thus, the permanent magnets 10 in the door panel 1 and the windings 18 in the stator element 15 (interpreted in the Office Action as the claimed coil) interact with one another to enable the "reciprocal movement of door panel 1".

Since Kabout expressly teaches that the door panel 1 is suspended by the permanent magnets and the strip 11, there is no teaching in Kabout that the permanent magnets 10 and the winding 18 form a holder to suspend the door panel 1. Therefore, Kabout does not disclose, teach or suggest "said permanent magnets and said coils form a holder so that the guide carriage, with the fixed door leaf, is suspended at least partially by a magnetic force between said permanent magnets and said coils of said stator arrangement," as expressly recited in independent claim 10.

The Examiner has indicated that because the coils 18 of Kabout are above the magnets 10, any magnetic force therebetween would have a vertical component that would at least partially suspend the door. While applicants do not necessarily believe this to be true,

independent claim 10 is further amended to recite that the at least a portion of the magnets are horizontally co-planar with the coils. Kabout clearly fails to disclose this structural limitation.

Neither Karita nor Tucker remedy the above discussed deficiencies of Kabout. Tucker merely discloses an elevator door suspended by rollers. Karita discloses an embodiment in which a door is suspended on a guide member by electromagnet units 430 (see Figs. 13 and 14 of Karita). The electromagnetic units 430 are described as identical to units 220 of Fig. 9, which are described at col. 5, line 17, *et seq.* The traveling magnetic field generating units 450 in Figs. 13-14 of Karita are described as identical to units 142, which are described at col. 4, line 26, *et seq.* Each embodiment of Karita discloses separate arrangements for suspending and driving the door. Accordingly, the combination of Kabout and Karita fails to disclose, teach or suggest “a plurality of permanent magnets fixed to said guide carriage, wherein at least a portion of each of the permanent magnets is horizontally co-planar with said coils” and “said permanent magnets and said coils form a holder so that the guide carriage, with the fixed door leaf, is suspended at least partially by a magnetic force between said permanent magnets and said coils of said stator arrangement” and “wherein the same permanent magnets and coils form a linear drive for the door leaf so that the guide carriage can be driven along said guide track by said magnetic force”, as expressly recited in independent claim 10

In view of all the above, independent claim 10 patentably distinguishes over the cited art and is thus allowable.

B. Independent Claim 19

Similar to independent claim 10, independent claim 19 recites, *inter alia*, “a plurality of permanent magnets fixed to said guide carriage, at least a portion of each of said permanent magnets being horizontally co-planar with said coils, and said permanent magnets and said coils being operable to generate a magnetic force for at least partially suspending the guide carriage

and linearly driving the guide carriage along said guide track.” The combination of Kabout, Karita, and Tucker fails to teach the above limitations. Accordingly, independent claim 19 is allowable over the prior art of record for at least the same reasons submitted above in connection with independent claim 10.

C. Independent Claim 28

Similar to independent claim 10, independent claim 28 recites that “a plurality of magnets fixed to said guide carriage, at least a portion of each of said permanent magnets being horizontally co-planar with said coils, and said magnets and said coils form a holder so that the guide carriage, with the fixed door leaf, is suspended at least partially by a magnetic force between said magnets and said stator arrangement, and wherein the same magnets and coils form a linear drive for the door leaf so that the guide carriage can be driven along said guide track by said magnetic force.” Therefore, independent claim 28 is allowable for the same reasons that independent claim 10 is allowable.

D. Dependent Claims 14-18 and 20-27

Claims 14-18 and 20-27 depend, directly or indirectly, from allowable independent claim 10 and are therefore allowable therewith.

In addition, dependent claims 14-18 and 20-27 each include features that serve to even more clearly distinguish the claimed invention over the applied prior art.

Conclusion

Based on all of the above, it is respectfully submitted that the present application is now in proper condition for allowance. Prompt and favorable action to this effect and early passing of this application to issue are respectfully solicited. Should the Examiner have any comments, questions, suggestions or objections, the Examiner is respectfully requested to telephone the undersigned in order to facilitate reaching a resolution of any outstanding issues.

No fees or charges are required at this time in connection with the present application. However, if any fees or charges are required at this time, they may be charged to our PTO Deposit Account No. 03-2412.

Respectfully submitted,
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